

QBI - U.S. Appl. No. 10/721,383
 Attorney Docket: 009523-0307056

- Amendment -

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (*Currently Amended*): An illumination apparatus for an optical instrument comprising:

an illumination means outputting illumination light[[:]]; and

an optical element positioned on the light path of the illumination light outputted from the illumination means, the optical element comprising organic/inorganic composite material,

wherein the organic/inorganic composite material is made of organic component and inorganic component which are mixed in complex with each other have a transmission wavelength in the range of 750 nm to 250 nm in an organic/inorganic composite material.

2. (*Currently Amended*): An illumination apparatus for an optical instrument as claimed in claim 1, ~~wherein organic component of the organic/inorganic composite material is a component having a glass transition temperature higher than 150°C~~ comprising:

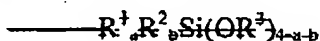
an illumination means outputting illumination light; and

an optical element positioned on the light path of the illumination light outputted from the illumination means, the optical element comprising organic/inorganic composite material,

wherein the organic/inorganic composite material is made of organic component and inorganic component which are mixed in complex with each other; and with organic component of the organic/inorganic composite material is a component having a glass-transition temperature higher than 150°C.

3. (*Original*): An illumination apparatus for an optical instrument ~~as claimed in claim 1 or 2, wherein the organic/inorganic composite material contains at least one of the components represented by the following general formula (1) or (2)~~ comprising:

General Formula (1)



wherein R^1 and R^2 are the same or different organic groups, R^3 is an alkyl group, and alkyl halide group, and aryl group or an aryl halide group of which carbon number is between

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~~1 and 6, and "a" and "b" are integers between 0 and 2 and "a+b" is an integer between 1 and 2;~~

an illumination means outputting illumination light; and

an optical element positioned on the light path of the illumination light outputted from the illumination means, the optical element comprising organic/inorganic composite material,

wherein the organic/inorganic composite material is made of organic component and inorganic component which are mixed in complex with each other; and the organic/inorganic composite material contains at least one of the components represented by the following formula (2).



General Formula (2)

(M¹ is at least one of metal elements which is selected from a group consisting of Al, Be, Ge, Hf, La, Mg, Sc, Ta, Ti, V, Y, Zn, and Zr, R⁴ is an alkyl group, an alkyl halide group, an aryl group or an aryl halide group of which carbon number is between 1 and 6, and "n" is a positive integer as a valence of the metal element M¹).

4. *(Currently Amended)*: An illumination apparatus for an optical instrument as claimed in claim 43, wherein the organic/inorganic composite material contains a component having a glass-transition temperature higher than 150°C as its organic component and a component capable of transmitting lights in a range including the visible wavelength range and the ultraviolet wavelength range as its inorganic component.

5. *Cancelled*.

6. *(Currently Amended)*: An illumination apparatus for an optical instrument as claimed in any one of claims 1 through 3, wherein the illumination apparatus for the optical instrument is an illumination apparatus for a microscope.

7. *(Currently Amended)*: An illumination apparatus for an optical instrument as claimed in claim 1 or claim 2, wherein the organic/inorganic composite material is made of at least one structure selected from the group of:

a. ~~an IPN structure which is mixed in complex with each other on molecular level or nano-scale level and has a structure in which a polymer matrix formed of organic~~

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~~backbones and a matrix formed of inorganic backbones are interwoven and interpenetrated into each other.~~

ba. a composite structure, in which inorganic nano-scale fine particles are dispersed in a polymer matrix formed of organic backbones, and

eb. a copolymerized structure, in which a monomer or an oligomer formed of organic backbones and a monomer or oligomer having inorganic element are copolymerized.